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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/582,630 07/26/00 DI CIOCCIO

L 194310USPCT

MMC1/0531

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EXAMINER

EVERHART, C

ART UNIT

PAPER NUMBER

2825

DATE MAILED:

05/31/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/582,630

Applicant(s)

DI CIOCCIO, LEA DI

Examiner

Caridad M. Everhart

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.

- 18) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

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Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 8 recites the limitation "insulator" in line 2. There is insufficient antecedent basis for this limitation in the claim and in claim 2 upon which claim 8 depends.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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5. Claims 1-4, 6, 7, 8, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang et al (US 6,171,965) .

Kang et al discloses a process comprising the steps of forming a layer of semiconductor material on a surface of a substrate (col. 10, lines 52-67). Implanting ions in the first substrate (col. 3, lines 52-57; col. 4, lines 15-23). The substrate is transferred to a carrier (col. 12, lines 47-54). Providing energy to cause cleavage along the cleavage zones (col. 5, lines 20-32 and 58-62; col. 6, lines 60-67 ; col. 7, lines 1-8; and col. 11, lines 1-10), in order to remove superficial layer of material. The energy may be thermal or mechanical (col. 6, lines 60-67). Chemical etching may also be used to remove the layer (col. 6, lines 48-51). SiC is also taught (col. 10, line 64). A thermal step is used to join the substrates (col. 12, lines 55-60). Because it is taught that heating such as thermo-electric heating or a furnace and the like can be used to cause cleaving(col. 7, lines 1-3), it is believed that the disclosure implies that the heat treatment could be extended to cause cleaving.

Although Kang et al does not state the step of forming a layer of semiconductor material on one surface of a first substrate, it is believed that the disclosure that the semiconductor substrate can be disposed on a workpiece such as a stiffener (col. 10, lines 52-55) encompasses this step.

6. Claims 5, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang, et al as applied to claim 1 above, and further in view of Steckl et al (US 5,759,908).

Kang, et al does not teach the method of forming the SiC material nor the epitaxial growth step .

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Steckl et al discloses a process for forming an SiC layer on an SOI substrate by carbonization of Si (col. 3, lines 8-25). In addition, Steckl et al teach growing GaN on the SiC layer (col. 5, lines 18-41).

One of ordinary skill in the art would have been motivated to have combined the steps taught by Steckl et al with the process taught by Kang et al because Kang et al teach that hydrocarbon gases can be used to treat the substrate (col. 4, lines 18-22) and that group III/V materials may be used (col. 11, lines 10-15).

7. Claims 1-4, 6, 7, 8, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley et al (US 6,013,563).

Henley et al disclose the steps of implanting ions into a semiconductor substrate in order to facilitate the removal of a layer by cleaving (col. 4, lines 2-4 and 35-53). The energy supplied to cause the cleavage can include thermal energy (col. 6, lines 60-67 and col. 7, lines 1-5). The substrate can be disposed on a stiffener (col. 10, lines 44-57). A thermal step is used to join the substrate to a second substrate (col. 12, lines 42-50). Because it is taught that thermal energy can be used to cleave the layer to be removed, it is believed that the prolonging a heating step to cause the cleavage is implied in the disclosure. The substrate may have an oxide layer (col. 14, lines 28-32). A chemical source may also be used to remove the layer (col. 6, lines 48-52).

Although the steps of forming a semiconductor material on a substrate are not stated in Henley et al, it is believed this step is encompassed by the disclosure of forming the substrate on a stiffener.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Everhart whose telephone number is (703) 308-3455. The examiner can normally be reached on Mon.-Fri. from 9:00 to 4:30..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached on (703) 308-1323. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722 or 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

C. Everhart

May 21, 2001


CARIDAD EVERHART
PRIMARY EXAMINER